

330.46
646.16

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT INVESTIGATIONS

Project h-1-22

Date

Author

TITLE

FOREST INSECT SURVEY - KINGS CANYON-SEQUOIA NATIONAL PARKS

SEASON OF 1944

by

J. E. Patterson

Forest Insect Laboratory
Berkeley 4, California
December 18, 1944

SUBJECT-

INDEX NO.-

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
FOREST INSECT INVESTIGATIONS

FOREST INSECT SURVEY - KINGS CANYON-SEQUOIA NATIONAL PARKS

SEASON OF 1944

Approved by:

F. P. Keen
Entomologist, in Charge

Submitted by:

J. E. Patterson
Entomologist

Forest Insect Laboratory
341 Giannini Hall, U. C.
Berkeley 4, California
December 18, 1944

FOREST INSECT SURVEY - KINGS CANYON-SEQUOIA NATIONAL PARKS
SEASON OF 1944

FOREWORD

For the past six years an annual forest insect survey of the principal recreational forests of Kings Canyon-Sequoia National Park has been made by entomologists of the Berkeley Laboratory of the Bureau of Entomology and Plant Quarantine. The last previous report, based on the 1943 survey made by J. M. Miller and John E. Patterson, made an appraisal of loss estimates and compared conditions existing at that time with those of the preceding five years. A history of past infestations as far back as 1918 was also sketched in an attempt to clarify infestation trends over the long period since these forests have been under observation.

The present report merely adds one more year's loss data to the record. Its principal value is in reporting current loss conditions for control considerations. It is now possible to report the complete loss sustained in 1943. The record for 1944 is only partially complete since additional losses have undoubtedly occurred after the 1944 survey was made.

1. FIELD EXAMINATION.

Bureau of Entomology and Plant Quarantine, Berkeley Laboratory
G. R. Struble and John E. Patterson. November 1-2, 1944

2. AREAS EXAMINED.

Kings Canyon, Grant Park and the pine belt south of Grant to Middle Fork of Kaweah River.

3. SURVEY METHODS.

Principally general reconnaissance. Road and trail traverse supplemented by lookout observations. Measured losses were obtained from cruise of roadside plots established in representative stands. Each recreational area was sampled by this method. The loss data on these roadside plots are summarized in tables 1 and 2.

4. CURRENT TRENDS AND LOSSES.

Generally low endemic throughout most of the park forests. Slight increase on Kings Canyon floor where there is an abundance of high risk trees on the ancient moraines. The infestation trend since 1940 has been maintained largely at an even level. Faded trees occur singly and generally widely scattered. No grouping was observed anywhere in any pine species.

5. INSECTS INVOLVED IN CURRENT LOSSES.

Western pine beetle, Dendroctonus brevicomis Lec., in ponderosa pine; mountain pine beetle, D. monticolae Hopk., in sugar pine and lodgepole pine; Jeffrey pine beetle, D. jeffreyi Hopk., in Jeffrey pine; pine engraver beetle, Ips confusus Lec., in both ponderosa pine and sugar pine.

6. SPECIAL DEVELOPMENTS DURING SEASON.

No unusual developments occurred to upset the normal trend of infestations during the year. The windfalls that were laid down in 1943 in Grant Park and on Redwood Mountain had no observable effect on subsequent attacks in these areas.

7. AREAS REQUIRING SPECIAL ATTENTION.

- a. Kings Canyon. Conditions on the canyon floor have not greatly changed since those of 1943 which were reported at that time. The discussion of conditions in last year's report apply equally to those of the current year. There is a persistent high loss in these stands which will probably continue as long as susceptible trees are present. Direct control work against this type infestation by the usual methods of cutting and burning the infested trees cannot be expected to materially retard the rate of loss now going on. However, some sanitary benefits will result from such work carried out on the camp sites because it will eliminate broods of beetles which otherwise would emerge in close proximity to other trees and attack those whose vigor has been impaired by conditions resulting from intensive camp site usage. The current loss on this area will average between 40 and 50 killed trees per section. This rate of loss is expected to continue as long as there are high risk trees available for attack.
- b. Grant Park. Recent losses on this area have been very low and current conditions do not indicate early change from the present status. Maintenance control, performed by falling and treating all killed trees as soon as they are discovered, should result in maintaining the current low loss level.
- c. Redwood Mountain. Current losses on this area are as low as can be expected in any normal virgin forest. No special attention is indicated other than an occasional inspection.
- d. Marble Fork and Giant Forest. Current loss conditions on these areas are entirely favorable and do not warrant any special concern.
- e. Lodgepole. Lodgepole pine losses are negligible over the entire area. No infestation whatever was found on the lodgepole camp developed area. A residual infestation of the mountain pine beetle persists in other parts, but is insufficient to warrant any special action.

8. RECOMMENDATIONS.

- a. Maintenance control. This method of disposing of brood trees during the season they are attacked has proven good insurance against rising infestations wherever it has been practiced on park and recreational areas. Its continued use is highly recommended in Grant Park, Lodgepole, Marble Fork and Giant Forest areas. A small amount of such work done at the right time, properly directed and supervised should result in keeping these areas free from damaging infestations at minimum cost of time and funds.

- b. Direct control on a general scale is not recommended at this time against the infestation on Kings Canyon floor. However, treating all infested trees on the camp sites early in the spring of 1945 is advised. This work would not entail any great expenditure of time or funds and should result in eliminating local beetle broods and prevent a concentration of beetles on the camp sites where the greatest harm would result from their attacks.

Table 1. Recorded pine losses sustained on roadside plots in 1943
(Complete record)

Area	Plot No.	Acreage	Tree Spp.	No. of trees	Volume	Trees	Volume	Volume per acre
Kings Canyon	1	76	PP	4	5,320			
	2	132	PP	6	1,530			
		<u>208</u>		<u>10</u>	<u>6,850</u>	<u>10</u>	<u>6,850</u>	<u>33</u>
Grant	3	184	SP	1	770	1	770	4
Redwood Mtn.	4	200		0	0			
	5	240	JP	4	410			
		<u>440</u>		<u>4</u>	<u>410</u>	<u>4</u>	<u>410</u>	<u>1</u>
Marble Fork	6	104		0	0	0	0	0
Giant Forest	7	60		0	0			
	8	72		0	0			
		<u>132</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

Table 2. Recorded pine losses sustained on roadside plots in 1944
(Partial record)

Area	Plot No.	Acreage	Tree No. of		Volume	Trees	Volume	per acre
			Spp.	Trees				
Kings Canyon	1	76	SP	1	230			
			PP	5	3,100			
	2	132	SP	1	230			
			PP	6	6,300			
	-	<u>208</u>		<u>13</u>	<u>9,860</u>	<u>13</u>	<u>9,860</u>	<u>47</u>
Grant	3	184	SP	4	960	4	960	5
Redwood Mtn.	4	200		0	0			
	2	<u>240</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
		<u>440</u>						
Marble Fork	6	104	PP	1	320	1	320	3
Giant Forest	7	60		0	0			
	8	<u>72</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
		<u>132</u>						

Table 3. Estimated insect-caused losses in pine on reporting areas for the years 1943 and 1944.

Reporting Area	Timbered acreage	Timber killed in 1943 (complete record)			Timber killed in 1944 (partial record)		
		Trees	MBM	Trees per section	Trees	MBM	Trees per section
Kings Canyon	3,000	140	95	30	200	150	40
Grant	2,500	50	35	13	40	40	10
Redwood Mtn.	7,500	70	35	6	80	40	7
Marble Fork	8,000	100	70	8	75	60	6
Giant Forest	6,000	90	60	9	80	55	8
Middle Fork	20,000	30	20	1	35	25	1
Lodgepole	<u>10,000</u>	<u>50</u>	<u>15</u>	<u>4</u>	<u>60</u>	<u>20</u>	<u>5</u>
	570,000	530	330		570	390	
	57,000						

6 copies typed. distribution as follows.

- 1 - FCC
- 2 - Regional Director (1 - Chicago)
- 1 - File
- 1 - Park Superintendent
- 1 - J. G.